

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA



**FILED**

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Order Instituting Rulemaking to Implement the  
Commission's Procurement Incentive Framework  
and to Examine the Integration of Greenhouse  
Gas Emissions Standards into Procurement  
Policies.

Rulemaking 06-04-009  
(Filed April 13, 2006)

COMMUNITY ENVIRONMENTAL COUNCIL REPLY COMMENTS ON STAFF  
PROPOSAL FOR REPORTING REQUIREMENTS

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## COMMUNITY ENVIRONMENTAL COUNCIL COMMENTS ON STAFF PROPOSAL FOR REPORTING REQUIREMENTS

The Community Environmental Council (“Council”) respectfully submits these reply comments on the Joint Staff Proposal for Reporting Requirements (“Joint Staff Proposal”).

The Council is a member-supported environmental non-profit organization formed in Santa Barbara in 1970 and is the leading environmental group in our region. More information on the Council and our energy program may be found at [www.fossilfreeby33.org](http://www.fossilfreeby33.org).

Our comments are summarized as follows:

- Oregon and Washington believe that Northwest import average emissions factors should be more than double what the Joint Staff Proposal recommends.
- After examining the merits of the various views, the Council recommends splitting the difference between NW estimates and CA estimates and using an interim figure of 722 lbs of CO<sub>2</sub>/MWh, up from 419 lbs in the staff proposal.
- At the same time, the joint commissions should continue to work with the other states to refine these figures.
- The Council also identifies a number of areas of significant uncertainty in terms of arriving at a full and accurate accounting of all California-related greenhouse gas emissions: import emissions; transmission losses (including natural gas); other greenhouse gases such as methane and nitrous oxide; and lifecycle emissions from all power sources, but

particularly LNG, which some studies show has much higher emissions than domestic natural gas.

## **I. Discussion of Oregon and Washington Comments**

These reply comments primarily address issues raised by Washington and Oregon in their respective letters. However, we include some broader comments relevant to the points raised in those letters and relevant to the Commission's goal of creating an accurate reporting protocol.

The State of Washington Department of Community, Trade and Economic Development (CTED) submitted a letter to the Commission on July 10, 2007. The letter states, in part:

We are concerned that methodologies that California feels under deadlines to adopt now will not serve the multiple states well over time and at the most basic level will encourage double-counting of the low-emission resources and under representation of the high-emission resources.

Our high-level message is that Washington State is involved in multiple state and regional processes now to obtain more accurate data on our electric industry emissions profile and to develop an accurate tracking or reporting mechanism; the methodologies proposed by the California Energy Commission's staff at this time reduce the accuracy of the west's overall emissions tracking rather than enhances. More specifically, Washington State is concerned that the Commission's staff are using a low default value of 419 pounds of CO<sub>2</sub> per megawatt-hour for unspecified imports from the Pacific Northwest. From our Utility Fuel Mix Disclosure process, we determine the emissions from the "net system mix", or electricity available for export, to be 1,014 lbs. CO<sub>2</sub>/MWh in 2006 and 1,062 lbs CO<sub>2</sub>/MWh in 2005.

At almost 600 lbs CO<sub>2</sub>/MWh difference between the Staff Proposal's assumptions for Northwest (NW) imports and what CTED calculates, there is clearly a serious discrepancy that should be resolved.

The State of Oregon's Public Utilities Commission (Oregon PUC) and Department of Energy also submitted a letter to the Commission on July 10, 2007. It states, in part:

California's draft protocol conflicts with Oregon and Washington's methodology. California's methodology assumes most of its imports from the Northwest are hydro on the basis that our thermal resources, including merchant plants, first serve Northwest retail loads. This does not reflect actual practice.

California's draft protocol results in a CO<sub>2</sub> emissions value from non-specific sources in the Northwest imported to California that is less than half the value assigned through the Oregon/Washington methodology. The draft protocol also assigns CO<sub>2</sub> rates for imports from the Southwest that are significantly different than for imports from the Northwest without sufficient justification.

In conversations with Phil Carver, from Oregon's Department of Energy and Stacey Waterman-Hoey, with Washington's CTED, the Council has learned that Oregon and Washington hold very similar views on this issue, as is suggested by the statements just quoted.

**To state the problem very clearly: Washington and Oregon believe emissions for NW imports to California average over 1,000 lbs CO<sub>2</sub>/MWh, whereas the staff report assumes only 419 lbs CO<sub>2</sub>/MWh.**

The Northwest Power Pool Net System Mix document<sup>1</sup> states that the 2006 net system mix was:

- Biomass: 1.11%
- Coal: 38.73%
- Coke: 0.27%
- Hydro: 43.31%
- Landfill gases: 0.03%
- Natural gas: 13.57%
- Nuclear: 2.34%
- Waste and other: ~1%

The NW net system mix is calculated in the same way as California's Net System Power calculation: by subtracting all the claimed power from the gross system mix. Accordingly, using average emissions factors for significant emission sources (bituminous and lignite coal, natural gas, and coke) in the previous list, we obtain a weighted average of  $(13.57\% \times 952 + 38.73\% \times 2,236 + 0.63\% \times 2,837 + 0.27\% \times 4,124) / 100\% = 1,024 \text{ lbs CO}_2/\text{MWh}$ .<sup>2</sup> This is very close to CTED's figure of 1,014 in 2006, with the discrepancy arising only from some smaller sources not included in the above calculation. The Joint Staff Proposal uses somewhat different emissions factors, however. If we plug the staff figures into the above formula, we obtain a weighted average of 1,057 lbs CO<sub>2</sub>/MWh for aggregate NW net system mix imports – a higher figure than that calculated by CTED. The Joint Staff Proposal NW import average emissions factors of 419 lbs/MWh reflects the fact that 88% of the NW imports are calculated to come from unspecified sources and 12% from specified sources. Staff assume a large part of

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<sup>1</sup> Available at:

<http://www.cted.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&ItemID=4672&Mid=863&wversion=Staging>.

<sup>2</sup> Emissions factors are taken from Attachment A to the Joint Staff Proposal, page 1.

the unspecified imports is comprised of hydro power (66%, with 2% nuclear and 1% renewables), whereas CTED's Net System Mix calculates only 43% from hydro. These discrepancies are discussed further below.

According to Jim Lazar, a consultant based in Olympia, Washington, with extensive knowledge of the California and NW electricity markets, dispatch rules in the NW result in coal plants coming online only when there is demand in California. Otherwise, when there is enough hydro capacity (as there generally is), coal plants are not used to serve in-state load in Washington or Oregon. Accordingly, Lazar's belief is that the coal plants in the NW would almost never operate if the NW was not connected to the California grid. This view is shared by CTED and the Oregon PUC.

In other phone conversations, Karen Griffin and Scott Murtishaw informed the Council that the discrepancy between the NW's own figures and the staff figures arose due to a number of divergent assumptions/conclusions:

- Washington and Oregon don't account for BC Hydro imports to California, which are about 90% hydro, comprising \_ % of all NW imports, and staff do account for these imports
- Washington and Oregon double count Nevada and Utah's emissions because staff doesn't include these states in the NW import calculations (staff includes these states in SW imports), but Washington and Oregon do
- Griffin and Murtishaw believe there is sufficient NW hydro for all claimants, avoiding any "double dipping," whereas CTED and the Oregon PUC apparently believe most of the NW hydro is being used in the NW

Attachment A to the Staff Proposal also states that NW imports are assumed to be 69% carbon-free, and “mostly hydro.” This statement clearly differs from Lazar’s, CTED’s and Oregon PUC’s positions, which assume most hydro power produced is used in the NW and coal is the primary marginal resource for exports.

In terms of BC Hydro’s exports to California, even though BC Hydro’s owned generation is 90% hydro, it buys power from Alberta on a regular basis, which is mostly coal. Jim Lazar is of the opinion that BC Hydro’s exports to California are largely coal, not hydro. With BC Hydro’s imports constituting only 20% of total NW imports, and possibly a substantial amount of these imports being coal, it seems unlikely that BC Hydro’s imports will support staff’s NW imports aggregate 419 lbs calculation.

The Council is currently in dialogue with Michael Bradley, with Washington State University’s Energy Division – a contractor to CTED – to determine which plants in Utah and Nevada, with x lbs of associated CO2 emissions, are included in CTED’s Net System Mix report. The Northwest Power Pool includes some power plants from Utah and Nevada, as staff pointed out, but this is apparently not very many plants. In fact, federal statute specifies that the only power generation in Utah and Nevada that is included in the NWPP are those stations that are in the Columbia River Basin – the total of these generation plans is very small and probably won’t change average emissions substantially.<sup>3</sup> We should have more information in a couple of weeks from Mr. Bradley re the actual emissions associated with NWPP power plants located in Utah and Nevada.

**Assessing the arguments from California joint staff and Oregon and Washington, it seems there is some merit to increasing the Joint Staff**

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<sup>3</sup> Northwest Power Act, 16USC 839a(14)(A). Thanks to Jim Lazar for this reference.

**Proposal's assumptions re NW imports, but probably not to the level**

**Washington and Oregon recommend.** The Council recommends, for the time being, simply splitting the difference between the NW states' calculations and the staff calculations. This results in  $1,024 + 419/2 = 722$  lbs/MWh, a number which is probably closer to reality than the current number in the Joint Staff Proposal.

However, **it is clear that more discussion needs to take place between the three states** – as is acknowledged by all the concerned parties. With a very short time frame for completing the Joint Staff Proposal, the Council recommends a revised estimate for NW imports and then a more detailed discussion with Oregon, Washington and other western states under the aegis of the Western Region Climate Initiative, a forum that is now ramping up its activities. The Joint Staff Proposal endorses this view when it states: “The State should work with Washington and Oregon to establish a pilot project” to adjust regional factors to account for claimed generation. The difference between the Joint Staff Proposal's recommendations and the Council's is that we believe some adjustments should be made now and that the multi-state process should continue to fine-tune current estimates.

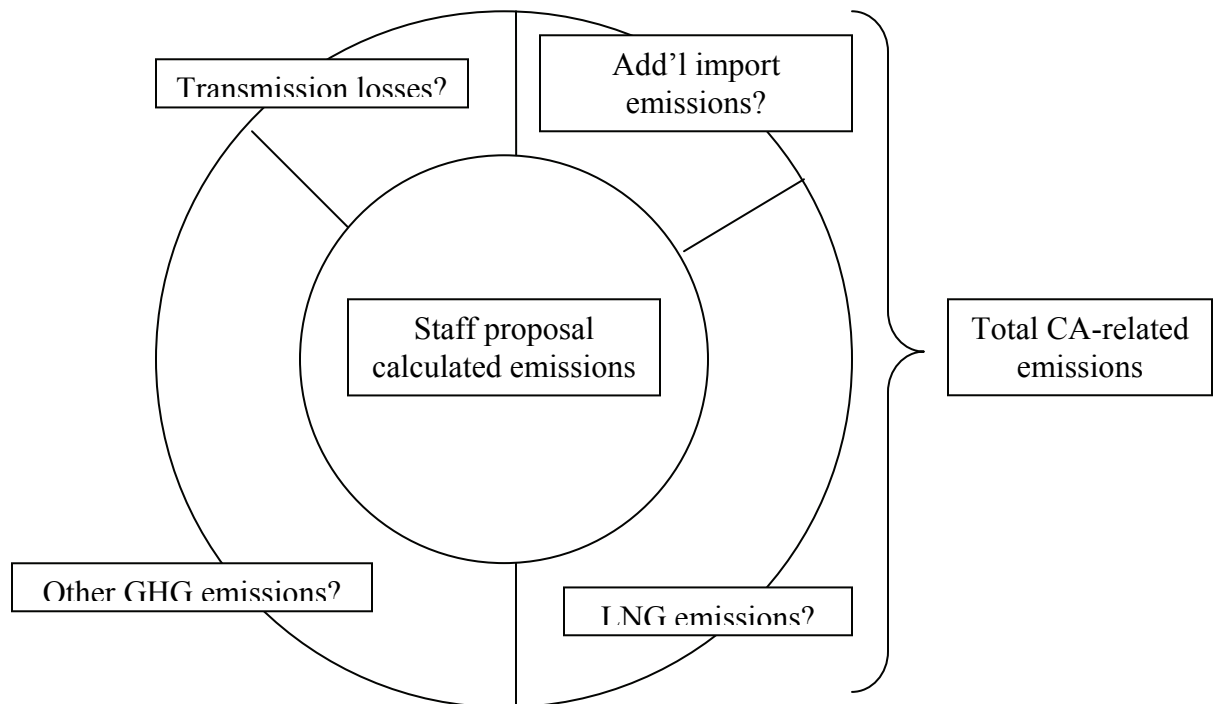
Even though the Joint Staff Proposal is an interim document, it is often the case that “interim” documents become difficult to change substantially as time passes. Accordingly, it would be best for the Joint Staff Proposal to be as accurate as possible now – while acknowledging that some things will have to wait for further refinement. We discuss in more detail in the next section the major areas of uncertainty that will need more work over the next year or more.



## II. Other Concerns Regarding Accuracy and Completeness

Stepping back for a moment, it's important to consider the range of possible inaccuracies in the Joint Staff Proposal, which is acknowledged by all parties to be a first approximation of actual California-related emissions, not a final and complete tally. Figure one depicts the primary areas of continuing uncertainty identified by the Council. There are surely others, but these four areas seem to encapsulate much of the remaining uncertainty. The graphic is a schematic in terms of depicting the magnitude of each area of uncertainty, though two of the categories ("other GHG emissions" and "LNG emissions") could in fact lead to a much higher estimate of total California-related emissions over time.

Fig. 1. *Total California-related greenhouse gas emissions by 2020.*



### *Additional import emissions*

The Joint Staff Proposal calculates emissions from specified out-of-state generation total 32.63 million tons of CO<sub>2</sub>, whereas unspecified emissions from NW imports total 3.40 million tons and unspecified SW imports total 8.82 million tons. The area of greatest uncertainty in discussing imports is clearly the unspecified imports, which amount to 27% of all import-related emissions (under staff calculations). If unspecified emissions are in fact higher by a factor of two, this percentage rises to 43%. This is, accordingly, a significant area of uncertainty that should be resolved.

In a paper examining the new proposed methodology for estimating power imports into California (Alvarado & Griffin, 2007<sup>4</sup>) completed for Council Attorney, Tam Hunt, pursuant to a class he teaches on Renewable Energy Law & Policy at the UC Santa Barbara Bren School of Environmental Science & Management, authors Amy Kidd and Lijin Sun state:

Difficulty may arise from getting sellers to cooperate in data collection. BPA, for example, has already denied or ignored the CEC's requests for information (Alvarado and Griffin 2007, 19). In addition, the lack of standard accounting practices leads to the potential for double counting. All counting conventions are voluntary, and "Northwest utilities are allowed to purchase unbundled environmental attributes to 'green' their portfolios." For example, "a Northwest utility that sells hydropower to California and receives gas-fired generation in exchange is allowed to count the environmental attributes of its total hydro and to exclude the environmental attributes of its gas-fired purchases" (28). As a result, the risk of double counting is very high, which could

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<sup>4</sup> The Alvarado & Griffin paper formed the basis for much of the Joint Staff Proposal's recommendations re assessing GHGs from imports.

result in drastically inaccurate estimation of GHG emissions for AB 32 implementation.<sup>5</sup>

This passage highlights a broader problem: **much utility greenhouse gas reporting is not verified, leading to a large potential for abuse and inaccuracy.**

As we move forward, each state will need to make emissions reporting mandatory and verified. This is a necessary pre-condition to any accurate methodology. The Joint Staff Proposal appears to support this view when it states: “The draft results presented [at the April 12 workshop] could be improved by better data that retail providers may be able to supply.”<sup>6</sup>

It is our hope that WREGIS will quickly become the regional tool for tracking all power generation and associated emissions – not just renewables as is its current mandate. The Council fully supports the Green Power Institute’s comments regarding bringing WREGIS online for all types of generation and as a greenhouse gas tracking mechanism as quickly as possible. For WREGIS to work, we do not need mandatory GHG caps in each state – rather, we need only mandatory reporting in each state, which should be a politically easier goal and achievable in a relatively short time frame (certainly before 2012, when all AB 32 regulations come into force). Kidd and Sun state:

WREGIS is not a stand-alone solution for calculating California’s power mix, but it could supplement the proposed [CEC] methodology, by providing reliable information as to the amount of renewable energy being imported from all the western states.<sup>7</sup>

Last, Kidd and Sun state:

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<sup>5</sup> Kidd and Sun, “Review of Utility Reporting Methodologies,” (2007), p. 21. The Council submitted the Kidd Sun paper for the record, but does not necessarily endorse all its findings. We point out portions that we expressly agree with in these comments

<sup>6</sup> At p. 19.

<sup>7</sup> *Id.* at 27.

Finally, too much attention appears to have been given to the idea of surplus hydroelectric energy in the staff paper that proposes this methodology, while natural gas was not described with any level of vigor. Natural gas represents the second largest source of unspecified power purchases, and thus should be thoroughly analyzed and discussed.<sup>8</sup>

The Council agrees with Kidd and Sun in that emissions from natural gas generation, as well as coal generation, from the NW, should be examined further before the Joint Staff Proposal is finalized for implementation.

With respect to Southwest region imports, the Joint Staff Proposal states: “Modeling runs of the Southwest power pool show that if California demand is decreased, coal continues to run but natural gas is shut down.” Assuming this is an accurate assessment for 2007, there is a strong likelihood that this dispatch model will change substantially over ensuing years as SW states enact their own greenhouse gas reduction plans and/or a federal plan is enacted. If this is the case, it is almost a certainty that natural gas will be preferred over coal plants when possible, substantially changing the export mix and allocation of emissions between states.

The Joint Staff Proposal also states: “The modeling runs showed that 96% of the imports were natural gas and 4% coal. Workshop parties were supportive of the principal finding, that natural gas is the Southwest marginal resource.” The Council takes issue with this statement as Council Attorney, Tam Hunt, expressed some doubt about the validity of these figures at the workshop, as did other parties.

Supporting the need to revise SW import emissions figures as well as NW figures, the Alvarado & Griffin paper states that a representative from the

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<sup>8</sup> *Id.*

Natural Resources Defense Council noted that the proposed methodology “may be overly conservative and appears to underestimate the amount of coal-fired generation that is actually imported.”<sup>9</sup>

#### *Transmission losses*

The Joint Staff Proposal states: “The 7.5% transmission loss factor was one we have used in other studies and was not developed for Retail Provider purchases over specified paths. Greater specificity to the characteristics of individual transactions may be appropriate.”<sup>10</sup>

The 7.5% figure may change substantially as transmission losses are examined in more detail, particularly as natural gas reporting (and associated GHG emissions) is added to the Commission’s reporting proposal. The CPUC just added natural gas considerations to this phase of R.06-04-009, so it is likely that this reporting protocol will be revised shortly to include natural gas considerations. With methane being a far more powerful greenhouse gas than CO<sub>2</sub>, and fugitive emissions from natural gas lines being a major source of methane emissions, it is possible that the 7.5% figure will be revised upward substantially in terms of CO<sub>2</sub> equivalents. These issues should be examined in detail by the joint Commissions as soon as possible.

#### *Other greenhouse gas emissions*

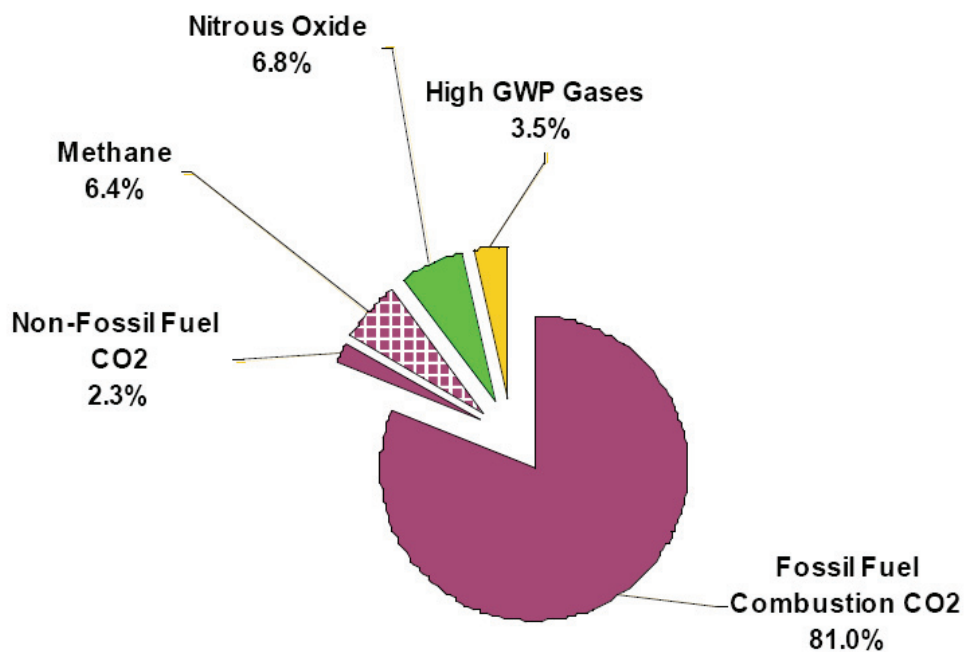
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<sup>9</sup> Alvarado & Griffin 2007, 6.

<sup>10</sup> Att. A, p. 5.

As just mentioned, methane is a very powerful greenhouse gas. The Climate Action Team Final Report estimated in 2006 that fossil fuel combustion CO<sub>2</sub> emissions account for 81% of the state's total direct emissions. Assuming the CAT report figures are fairly accurate, at least 19% of the direct emissions are not accounted for in the Joint Staff Proposal.

Figure 2. *Total greenhouse gas emissions in California.*



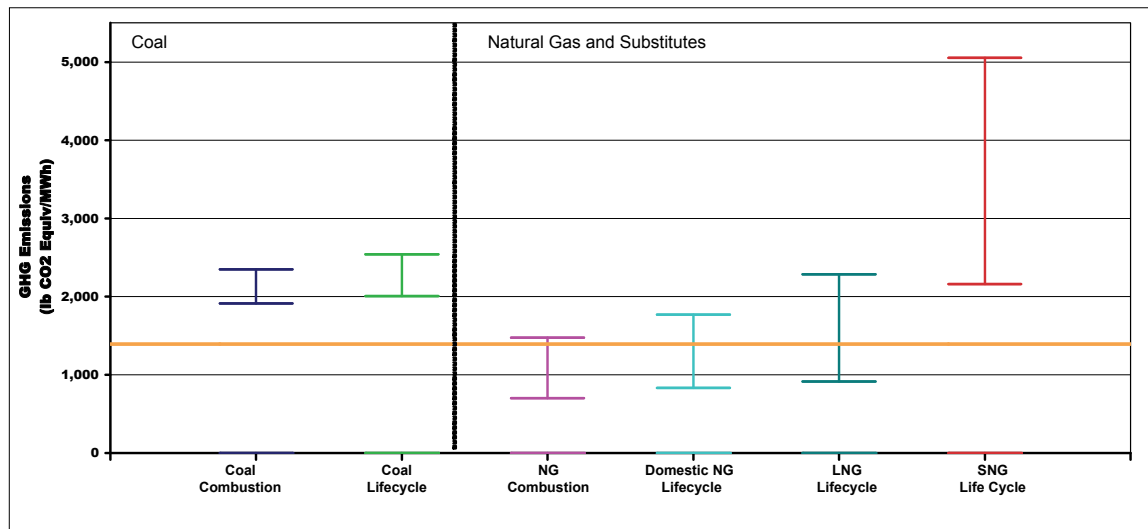
This problem should be remedied as soon as possible, particularly as California and the West appear to be relying more and more on natural gas, with its associated CO<sub>2</sub> and methane emissions influencing climate.

## LNG emissions

With LNG slated to possibly become a major source of power in California over the next decade, it's imperative that the Commissions consider the impact on California's emissions that will likely result from this shift.

Lifecycle emissions analysis should be completed for all electricity and natural gas sources. A recent report from Carnegie Mellon University found that **lifecycle emissions from natural gas plants that use LNG as a source of natural gas can be as high as lifecycle emissions from coal power plants, depending largely on where the LNG comes from.** (See Fig. 3).

Figure 3. *Lifecycle emissions of GHGs for natural gas, LNG and syngas.*<sup>11</sup>



This is a startling conclusion because natural gas plants are traditionally thought to have about half the emissions of a coal plant. The discrepancy arises when we realize that LNG is not NG. LNG is a highly energy-intensive form of natural gas, with high emissions associated with liquefaction, transportation and re-


<sup>11</sup> Jaramillo, Paulina, Griffin, Michael, Matthews, Scot, "Comparative Life Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation," (2007), to be published shortly in Environmental Science & Technology.

gasification. The Commission has previously declined to fully consider lifecycle emissions for LNG or other power sources in this phase of the proceeding, but it suggested early in this phase that it may consider this issue at a later date. It is the Council's hope that this issue is revisited in the natural gas portion of this phase. It is our recommendation that the Joint Staff Proposal make mention of this issue and the possibility of revisions to include lifecycle emissions for all power sources in the near future.

Similarly, we urge the Joint Staff Proposal to change all mentions of "zero emissions" or "zero carbon" electricity supplies to "low carbon" or "low emissions" because **it is simply not accurate that renewable energy, nuclear power or big hydro have zero emissions.**

Respectfully submitted,

TAM HUNT

A handwritten signature in black ink, appearing to read 'TH' followed by a stylized flourish.

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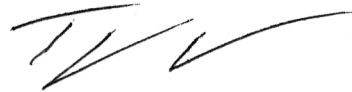
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### CERTIFICATE OF SERVICE

I hereby certify that I have served by electronic service a copy of the foregoing COMMUNITY ENVIRONMENTAL COUNCIL REPLY COMMENTS ON STAFF PROPOSAL FOR REPORTING REQUIREMENTS on all known interested parties of record in R.06-04-009 included on the service list appended to the original document filed with this Commission. Service by first class U.S. mail has also been provided to those who have not provided an email address.

Dated at Santa Barbara, California, July 20, 2007.

A handwritten signature in black ink, appearing to read 'TH', is positioned above a horizontal line.

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